collection, and to Dr. G. V. T. Matthews of the Wildfowl Trust for the loan of study skins of the Marbled Teal and White-eyed Pochard.

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Systematic notes on the Cattle Egret (*Bubulcus ibis*)

by C. VAURIE

Received 2nd August, 1963

The spectacular expansion of the Cattle Egret to the New World has received much attention but little has been paid to its geographical variation.

Two subspecies with a very wide distribution can be easily recognized (nominate *ibis* Linnaeus, 1758, type locality, Egypt, and *coromandus* Boddaert, 1783, type locality, Coromandel coast), with the possible addition of a local but doubtful form (*seychellarum* Salomonsen, 1934) known only from the Seychelles in the Indian Ocean. Nominate *ibis* breeds from the southern part of the Iberian Peninsula east to the Caspian districts of northern Iran and neighbouring Transcaspia, and south through Arabia and Africa, including Madagascar and the Mascarenes, to Cape Province; *coromandus* breeds from eastern Baluchistan and India east to eastern China and southern Japan, and south to the Sundas, Celebes, and Moluccas. Nominate *ibis* has expanded to both North and South America since the beginning of the twentieth century and recently also north to southern France and the delta of the Volga; *coromandus*, which had been widely introduced in Australia, is believed to have also reached the north of this sub-continent unaided.

The lengths of the wing and tail are similar in the two subspecies, but the tarsus of *coromandus* averages longer, its bill slightly longer and thicker, and, as a rule, its tibia is not feathered quite so far down as in nominate *ibis*. The measurements of twenty males and twenty females of each subspecies are as follows:

nominate *ibis*

Wing; males, 241–266 (253), females, 240–258 (247.6)
Tail; males, 79–93 (87.5), females, 74–93 (86)
Bill from skull; males, 61–71 (66.3), females, 60–70 (65.5)
Tarsus; males, 70–85 (77), females, 70–81 (76.1)
Bare tibia (length); males, 19–34 (25.3), females, 16–38 (29)

coromandus

Wing; males, 243–260 (253.8), females, 230–256 (246.4)
Tail; males, 76–98 (85.6), females, 76–92 (83.7)
Bill; males, 66–77 (71.1), females, 62–73 (68.5)
Tarsus; males, 80–91 (85), females, 78–87 (82.3)
Bare tibia; males, 27–52 (38), females, 23–52 (38.6)

The two birds are all white and indistinguishable in colour in the non-breeding plumage, but, in the breeding plumage, the feathers of the head, throat, breast, and mantle are rusty-buff, or "golden," in *coromandus*, as against pinkish-cinnamon in nominate *ibis*. In the latter, the cheeks and throat remain white, but not in *coromandus* where they are rusty-buff also. The pigmented feathers on the head and breast of *coromandus* are also shorter, stiffer, and a little harsher in texture than they are in nominate *ibis*.

Seychellarum is known only from three specimens that I have examined. Salomonsen (1934) states that the two specimens that he saw, and which are in the collection of the British Museum, are white on the throat as in nominate *ibis*, but "golden" on the crown, back, and breast as in *coromandus*. I find that these two birds are somewhat more "golden" than is normal in nominate *ibis*, but they are less "golden" than *coromandus* and can be matched in colour by occasional specimens of nominate *ibis* from the Mediterranean and Sudan.

The third specimen from the Seychelles is in non-breeding plumage and entirely white. It is in the collection of the Muséum National d'Histoire Naturelle in Paris and was kindly sent to me by Dr. Jean Dorst who took the trouble to have it unmounted and prepared as a skin. It was not seen by Salomonsen, who, however, was informed by Professor Berlioz that it was white and had a short wing.

The three birds from the Seychelles have a shorter wing than any specimen of nominate *ibis* that I have measured (their wing length measures 238, 238 in two males and 235 in one female), but Benson (1960), who has measured more birds from Africa than I have, reports that some are as small or smaller than the three from the Seychelles. He states that the wing measures 228–266 (244.6) in fifty from "Eastern Africa (Sudan and Abyssinia south to Zambesi)" and 230–257 (242.8) in twenty six from "Southern Africa (south of Zambesi)". The specimens that I had measured had been collected in southern Europe, or north of the equator in Africa, and it is probable that size declines clinally from north to south in Africa.

In short, the validity of *seychellarum* requires confirmation and, until more material becomes available, it seems best to synonymize *seychellarum* with nominate *ibis*.

The other measurements of the three birds from the Seychelles are:— Tail; males, 83, 84, female 86: bill; males, 65 (tip broken), 65, female, 65; tarsus; males, 78, 78, female, 77: bare tibia; males, 30, 40, female, 30.

Clancey (1959) has proposed that the birds of the Ethiopian region, including Madagascar and the islands of the western Indian Ocean, should be separated from nominate *ibis* and called *ruficrista* Bonaparte, 1855, on the ground that the colour of their soft parts does not change during the breeding season as it does in the populations of nominate *ibis* from Egypt and the southern Palearctic region. He suggests also that the birds which have colonized the New World may belong to *ruficrista*. The colour does change, however, for a short period in the birds which breed in America, and Benson (1960) has shown that *ruficrista* is not valid, as a change of colour happens also in the birds breeding in the Ethiopian region and islands of the Indian Ocean.

The very broad gap in distribution which separates nominate *ibis* from *coromandus* in the Iranian region remains unexplained and is a most

curious one when we consider that many parts of this region provide a suitable habitat for a species which has demonstrated that it is a great colonizer. I believe that it probably represents an ancient separation, as modern-day nominate *ibis* seems to have expanded from Africa and *coromandus* from south eastern Asia.

I would like to express my appreciation to the authorities of the British and Paris museums for lending me specimens and for their hospitality, and to Mr. E. Eisenmann for commenting on this paper.

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Pirenestes ostrinus and some other species in Mwinilunga, Northern Rhodesia

by C. W. Benson

Received 10th August, 1963

During a visit to Salujinga, in the north of the Mwinilunga District, at 10° 58′ S., 24° 07′ E., from 17th to 23rd March, 1963, when I was accompanied by my friend Mr. G. Bell-Cross, we were fortunate enough to find two nests of *Pirenestes ostrinus frommi* Kothe. On 18th March a male was disturbed from a nest in rich *Brachystegia* woodland, 20 yards from the edge of riparian evergreen forest (''mushitu''). It was built into the top of an 8ft. high bush of a *Syzygium* sp. It contained four eggs, incubation of which was about 50% complete. Two of them were unfortunately broken. The other two are described by Capt. C. R. S. Pitman as white, smooth, without gloss, size 17.4 x 14.1, 18.1 x 14.1 mm. The second nest, found on 23rd March, was inside mushitu, about 2ft. from the top of an unidentified 8ft. high sapling. The male parent was collected, with four feathered nestlings.

Both nests are typical estrildine-like, rather flimsy, structures, dome-shaped with entrance at the side. Approximate external dimensions (in mm.) are:— length 210, width 140, height 120, width of entrance 30. The first was made mainly of leaves of a wild ginger *Aframomum* sp., with some admixture of the leaves of a fern *Pteridium aquilinum* Kuhn, and lined with the grasses *Loudetia* ?*simplex* (Nees) Hubbard and *Panicum* sp. In the second, in which sanitation was poor, both the entrance and the bottom of the interior being heavily fouled with the nestlings' faeces, *P. aquilinum* predominated over *Aframomum* sp., while the lining was entirely of *Panicum* sp. The materials composing these nests support the conclusion to be drawn from their respective sites, that *Pirenestes ostrinus* is by no means confined to mushitu. Indeed all the species represented in these materials only occur outside mushitu.

Two further adults of *P. ostrinus* were collected on the same visit to Mwinilunga, by trapping with mist-nets set inside mushitu. All three had their crops crammed with unbroken hard white seeds of diameter about 2 mm. Those of one of the specimens were sent to the Federal Herbarium, Salisbury, and examined by R. B. Drummond. There were no fewer than